

### Abstract of the Disclosure

Micro-droplets of liquid containing organic molecules of interest are dried on selected planar solvo-phobic substrates under conditions facilitating segregated precipitation of the larger, less soluble analytes toward edge portions of the deposit. Micro-spectrometer imaging using white light and FTIR false color can identify points of interest, and the same optics generally directed perpendicularly to the substrates selectively captures normal Raman spectra from selected points in the deposit. The spectra are manipulated using various data techniques to extract reliable information concerning analytes present at pico-Molar levels. The selected spots can also be subjected to FTIR spectroscopy followed by MALDI mass spectroscopy to obtain a variety of information from the identical specimen.